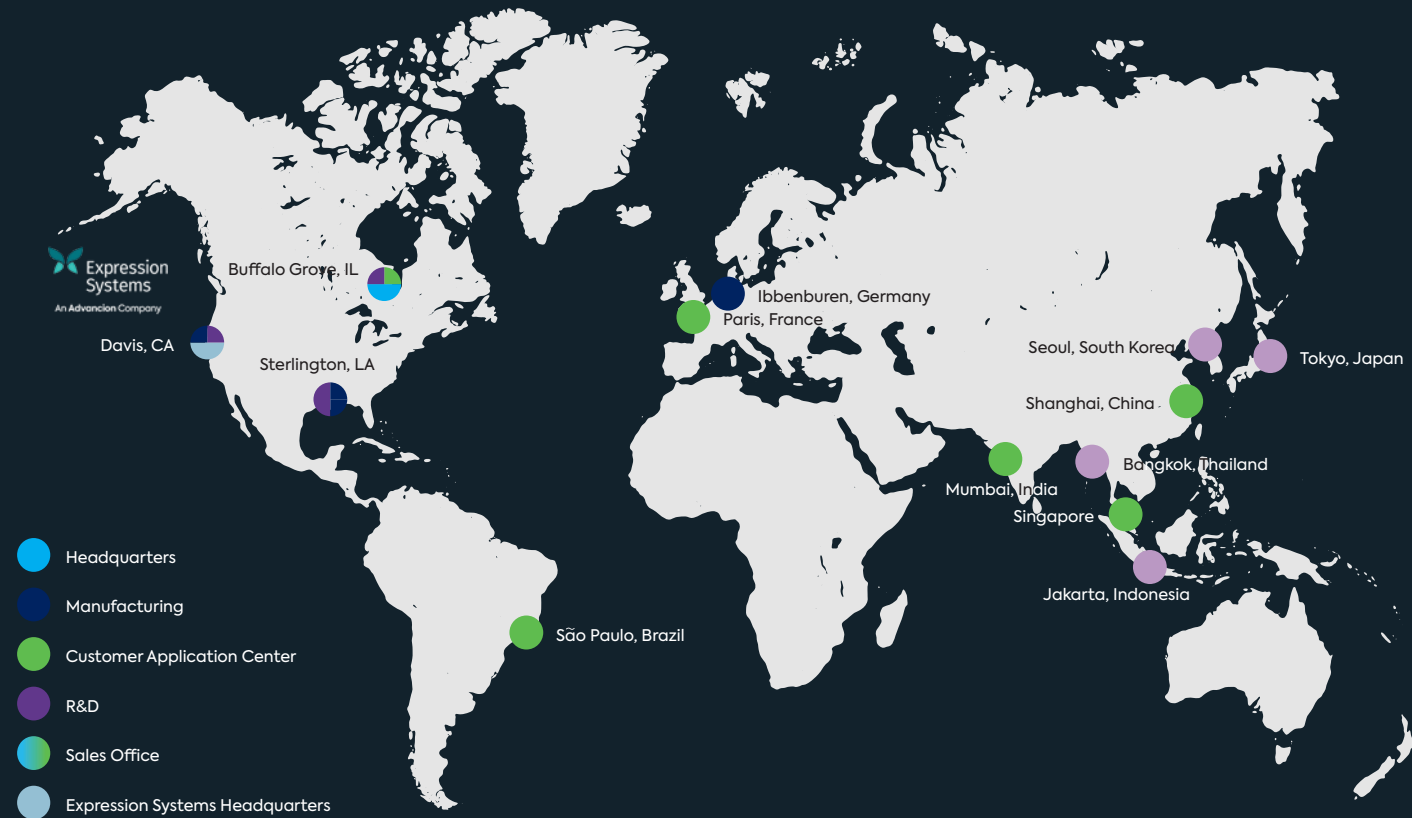


# Global Reach. Local Focus.

We operate six Customer Application Centers (CAC) that serve as regional collaboration hubs by bringing together world-class technical expertise specific to the Electronics industry. With state-of-the-art laboratories and advanced application knowledge, our experts work side-by-side with local and regional customers to expedite innovation essential to bringing new and exciting electronics products to market.



## Product Stewardship

Through our investments in application and new product development, we have a deep understanding of where our chemistries are (and can potentially be) used to actively address global trends in Life Sciences, Beauty and Personal Care, and other essential industries to help make our lives healthier, and more sustainable and comfortable. To help ensure that Advancion products are not used in ways for which they are not intended, Advancion personnel will assist customers in dealing with environmental and product safety considerations. Before handling any of the products, obtain available product safety information including the Safety Data Sheet(s) and take the necessary steps to ensure safety of use. For assistance, product Safety Data Sheets, or other information, please visit [advancionsciences.com](http://advancionsciences.com) or contact us at [info@advancionsciences.com](mailto:info@advancionsciences.com)

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## ELECTRONIC CHEMICALS

# VOLTAN™ Specialty Additives





## Finely Tuned Functionality for Producing Tomorrow's Cutting-Edge Electronics

Today's advanced electronics applications are manufactured with highly sensitive materials that can be easily damaged during the production process. Advancion produces a variety of high-performance VOLTAN™ chemistries that deliver the unique functionality formulators need without the harsh effects or environmental, health and safety concerns that often come with alternative chemical solutions.

With fully integrated dual-manufacturing capabilities in the U.S. and Germany supported by a single, global Quality Management System, Advancion provides a secure, stable supply of consistently high-quality, high-purity VOLTAN specialty additives, intermediates, solvents, and process aids for the most demanding electronics applications.

### Multifunctional Performance in a Wide Range of Applications

VOLTAN specialty additives are highly effective when used on fragile electronics components and during precision fabrication steps for semiconductor, integrated circuit (IC), flat panel display (FPD) printed circuit board (PCB) and lithium-ion battery (LiB) applications.

VOLTAN chemistries provide customizable functionality and performance in cleaning, etching and stripping solutions, including:

- Thorough cleaning of semiconductor wafers after etching, chemical mechanical planarization (CMP) and photoresist stripping
- Effective in cleaners, etchant and strippers with lower metal corrosion in precision electronics applications
- Enhancing removal of unwanted debris during manufacturing, while preserving end-product functionality
- Multiple options available for water- and solvent-based systems

In LiB applications, VOLTAN chemistries are specifically designed to improve dispersion of active and conductive materials, and provide several multifunctional performance benefits, including:

- Producing more stable conductive-carbon slurries with reduced viscosity
- Optimizing the conductive network in finished electrode films while enhancing film density via optimal particle packing to help reduce cracking of cathode coatings
- Improving processing with a less toxic solvent and higher active material loading at the same processing viscosity

## Versatility. Compatibility. High Purity.

VOLTAN specialty additives can be used in a variety of processes during electronics manufacturing. Our high-purity, multifunctional chemistries cover a broad range of chemical structures with varied polarity, basicity and solvency characteristics, such as pKa, solubility and other physical-chemical properties. Common applications of VOLTAN chemistries include chemical mechanical planarization (CMP), post-CMP cleaning, etchant, photoresist stripping and removal of flux, as well as improving carbon nanotube (CNT) slurries, cathode / anode material slurries, and separator coating performance in LiB applications.

Advancion's portfolio of unique VOLTAN chemistries can provide efficient buffering performance for formulations across a wide pH range, helping to improve fluid stability and longevity, in turn optimizing productivity during the manufacturing process.

Commercial Products	Freeze/melting point, °C	pKa	Log P(ow)	Solubility in water	Solubility in NMP	Applications
VOLTAN™ 95	-2	9.7	-0.63	Miscible	-	IC, FPD, PCB, LiB
VOLTAN™ 100	30	-		Miscible	Miscible	LiB, IC
VOLTAN™ 200	-20	-		Miscible	Miscible	LiB
VOLTAN™ E	-3	9.8	1.3	Miscible	-	IC, FPD, PCB
VOLTAN™ AB	-2	9.5	-0.45	Miscible	-	IC, FPD, PCB
Research Products	Freeze/melting point, °C	pKa	Log P(ow)	Solubility in water	Solubility in NMP	Applications
RS-12301	171-172	8.0	-2.31	Soluble	-	IC
RS-12324	-24	8.8	-1.02	Soluble	-	IC, FPD, PCB
RS-12305	109-111	8.8	-1.75	Soluble	-	IC, FPD



### DID YOU KNOW?

The high-performance dispersency of VOLTAN 100 helps create high-solid-content slurries with a manageable viscosity, enabling better high-speed coatability during electrode production. In addition, upon drying, VOLTAN 100 evaporates out of the film, ultimately providing higher cathode density in the film, minimizing organic residue and reducing the potential for disturbing the charge / discharge process.